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Reducing Collision In Multipacket Transfer And Receiver Using Token Passing Techniques In Wireless Ad Hoc Network

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Abstract
Transmitting and Receiving the multiple packet on a single channel through a route node is very critical task. There may be a collision between more than one routes. One route node can send and receive the data to the two routes. It may generate a collision and may be the data exchange between more than one routes. That's why, we used here a token passing technique and time interval for successful transmission. The theoretical analysis show the total scenario and reduce the collision between routes.
Keywords— Token passing, Time slots, transfer/receive packets , MANET

I. Introduction

A day by day the uses of internet increases whether it is wired or wireless. The goal of internet uses is to less effort for physical connection and faster communication. That's why, user chooses wireless communication than wired. Now a days, wireless ad hoc network is very popular because of its structures. The wireless ad hoc network does not required any pre-infrastructures.[14] That's why it is mostly used in tactical field, battle field where secret message communication is more important without pre-establishing infrastructure for internet.

In mobile ad hoc neteork, all the nodes are wireless, they can communicate with each other using self confuring route nodes. [14]That's why, it is very preference able. The node i.e. source node want to communicate with other node i.e. destination node. The source node has to discover the the route nodes. There are many protocols available like DSR, DSDV, AODV etc.[14] when source node want to communicate with destination node he has to know the information about neighbor node. Also, source node has to count the hops that means the source node can select minimum hop count for communication[9].

There are many nodes available in routes. After selecting the route nodes using any route finding protocols, one node may be a route node of more than one route.[5] There may be a collision between neighbor discovery and communication between more than one source-destination nodes. The following fig. shows the collision between neighbour available for routes.

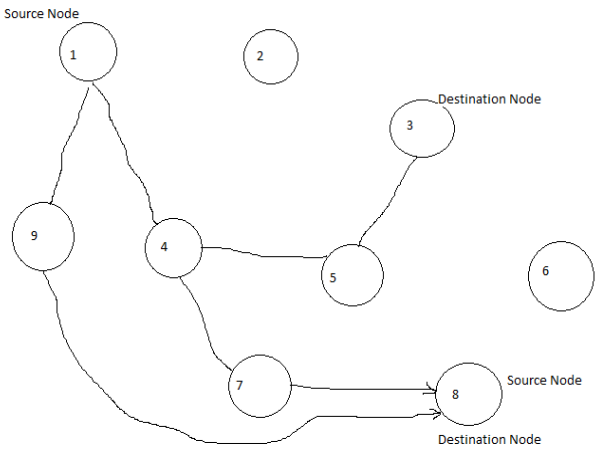

Fig.1 Multipacket Transfer/Receive at the same node

The above fig. shows the problem for multipacket transfer/ receiver. There are two source nodes nd two destination node. They has to communicate with each other. Node7 is a route node of two routes. When both routes nodes want to to communicate taking account of node7 at that time, there is a collision may occur which route first give the response and keep the routes information to securely send the message to particular routes. To avoid this collision, we used a token passing[2][6].

II. NETWORK MODEL AND AUUMPTIONS

MANET is a self configuring network. In which aource node decides route nodes itself. The source node broead cast the route request to the nodes which are in a radio range with its MAC address.[14] The route node which are free, they accept the request , add its MAC address and forward the route request

to its neighbor still they don't have find out the destination node. At the destination node, the MAC address will check , if the MAC address is correct sending by source node, it means it is reached to destination node. Then the destination node sends the acknowledgement to source node through route nodes. This is the simplest way for communication.

If there may problem occur like collision which is describes in Fib1. To solve this problem, we give the solution. Theoretically we prove the collision problem will solve.

Here we introduce the network model and several Assumptions, under which we will present the token passing technic and and corresponding analysis.[2]

- Each node has a unique MAC address
- All nodes are in a same or different radio range.
- Nodes use bidirectional antennas
- Nodes can transmit and receive on the same channel simultaneously.

A. Using Token

When one node is a route node of two routes, there may may be collision occur. That's why, we used here token.

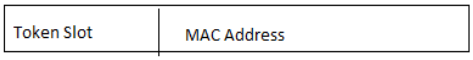

Fig.2 Token Slot

Here, we used 1bit for token. This token is generated by source ode with unique number. This number is decided by source node . when the source node will broadcast the route request message. Then source node sends the token also with that message. The route node also having a 1bit stored that unique token number for temporary upto the communication will not be finished. This token bit is used for temporary. After completing communication. The node may delete that token number. Now if the source node want to become an another route of node, the same procedure will follow. The route node can divide that bit slots into sub slots and stored the another sources unique token number. Here we are giving suggestion only for two routes. If we increase the routes for communication, these may be more memory space is required and there is a costly. That's why, a single bit can divide into subslots only two subslots.

Algorithm: Token passing

1: Source node add unique number as a token.
2: Source node broadcast the route request with token and monitor channel.
3: if it has already two route request, the request will discard.
4: if route node is free accept the request.
5: Add the sequence number and ID to route request message.
6: Forward the route request message.
8: If destination node is found, the destination node sends the acknowledgement to source node.

B. Time Interval

After circulation of token, the route node having a unique token of every separate routes source and destination node. The route node has two token now there is confusion between which route node has to give the response. Then every node has to add a slot i.e. time interval slot[15] .

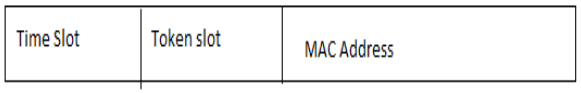

Fig. 3 Time Sub Slot

To avoid the collision between two routes. The node has assign a time slot. For first time slot, the route node give the response to the first node. After completion of time interval to route node gives the response to other route. It means, it can reduce the collision.

Discussion Here, we discussed some issues related to token passing and time interval and their corresponding analysis results.

1)Multiple nodes may be route node of more than one routes

Here, we discuss the situation when n number of nodes within the route having a multiple routes to communication.[10] At this situation, there may be more time required for transmission.

To solve this problem, we decide the only two token slots assign to nodes. Means they can only route nodes of two route. Also proving a time interval. If within timeslot the source node doesn't get the reply from destination node, the source node again repeat the steps from route request.

III. RELATED WORK

There are many researchers has focused on securely transmission in a MANET without occurring a collision between them and the node can transmit and receive the message from a single channel[9][10].

Vasudevan sl at[1] later pointed out that the expected time slots needed to finish the neighbor discovery process by using birthday protocols in[3] is neH_n, where H_n is the n^{th} harmonie number. The authors also proposed protocols for more realistic situations, where the size of a clique is unknown to nodes a feedback mechanism is introduced into the system and the clocks of nodes are not identical.

Navneet malpani[2] discuss the token circulation in MANET. In which the authors decide a

token and circulate to the route node for successful communication with every node.

With the development of MPR[6] Zeng et al[4] extended the result of [3] to the MPR situation where no collision occurs if and only if there are no more than k(K≥2) nodes simultaneously time needed to discover all nodes.

IV. CONCLUSION

In this paper, we proposed a token passing techniques by adding a time slot into every nodes before going to start communication. First we add a bit slot for dtoring a unique token ID created by source node. Further more, we add time slot. According to time slot, the route node can transmit and receive the message at a single channel.

This aadition of time slot, it may reduce the collision in Neighbour Discovery and secured communication without collision.

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